

REMARKS

Claims 1-20, 22-33, and 35 are pending. Claims 1-2, 6-9, 11-12, 15-16, 18-20, 26-27, 29-31, and 33 have been amended.

Amendments have been made to the specification and abstract to improve grammar and form. No new matter has been entered.

The advisory action dated October 11, 2005 fails to indicate whether or not applicant's amendment dated September 16, 2005 was entered. In a telephone interview with Examiner Vu on October 14, 2005 applicant's representative was informed that the amendment had been entered. Ex. Vu indicated that an Examiner Interview Summary would be forthcoming to memorialize the telephone interview. Applicant has not yet received a copy of the Examiner Interview Summary. This amendment proceeds on the understanding that the October 11, 2005 amendment was entered.

Claims 1-20, 22-33, and 35 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Reconsideration of this rejection respectfully is requested.

The claims have been amended to obviate this rejection by removing the allegedly-unsupported term "line(s)" as used in "shield line(s)." The claim amendments are made without prejudice and without admitting any failure to comply with the written description requirement.¹ Withdrawal of the 35 U.S.C. § 112, first paragraph rejection is appropriate.²

¹ Applicant notes MPEP § 2163.04 which informs that a description as filed is *presumed* to be *adequate*, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. See, e.g., *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore, must

The Office Action contains an objection to the drawings under 37 C.F.R. § 1.83(a) on that basis that the drawings do not illustrate features recited in claim 19. Claim 19 has been amended to address this concern.

The rejections of claims 1-20, 22-33, and 35 based on prior art are addressed as follows:

1. Rejection under 35 U.S.C. § 102(e) based on Robertson et al.:

Claims 1-2, 5-9, 11-12, 14-16, 18-20, 24, 26-27, 29-31, and 33 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Pat. No. 6,658,530 to Robertson et al. Applicant respectfully requests reconsideration of this rejection.

Claim 1 recites a circuit card with “a circuit element supported by the circuit card.” The circuit element has “a plurality of inputs and outputs,” and “a plurality of signal lines supported by the circuit card.” Each signal line is “electrically connected respectively to one of said plurality of inputs or one of said plurality of outputs.” A “plurality of shields [is] supported by the circuit card.” The signal lines are “grouped in a plurality of adjacent corresponding pairs.” A shield is “located respectively on each side of each of said plurality of corresponding pairs of said signal lines.”

have a reasonable basis to challenge the adequacy of the written description. As discussed in footnote 2, the Office Action presents an arbitrary and unsupported interpretation that is contradictory to applicant's specification. The examiner has not met the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in applicant's disclosure a description of the invention defined by the claims. *Wertheim*, 541 F.2d at 263, 191 USPQ at 97.

² The October 11, 2005 Advisory Action lays out the argument, unsupported by any evidence, that lines 60 drawn in FIGS. 3-5, designated as shields in the specification, do not support recitation of “shield lines” because the Examiner might interpret shield “lines” 60 as “being just a symbol to represent a separation between each pair of signal lines wherein a ground shield is provided in between.” Applicant disagrees. The features labeled 60 in FIGS. 3-5 are unambiguously identified as shields provided on each side of pairs of signal lines (also drawn as “lines” in FIGS. 3-5) on the circuit card. The shields 60 reduce cross-talk between adjacent signal lines. Moreover, the recitation of “shield lines” is consistent with the term “traces” recited (i.e., disclosed) in original claim 8. The lines designated as shields 60 and having the function described are not susceptible to arbitrary “interpretation” as symbols of separation.

Robertson et al. discloses a memory module. The memory module includes printed circuit board (PCB) 101 and a connector 102. The PCB 101 features signal traces 103 that are arranged to be as short as possible. The PCB 101 includes a power layer, an electrical ground layer, and a plurality of signal layers.

Robertson et al. does not teach or suggest a circuit card with “a plurality of shields supported by the circuit card” where “a plurality of signal lines supported by the circuit card” are “grouped in a plurality of adjacent corresponding pairs” and a shield is “located respectively on each side of each of said plurality of corresponding pairs of said signal lines.”

Instead, Robertson et al. teaches a grounding arrangement that involves ground *pins* 106 that are part of the *connector* 102. Robertson et al. is silent regarding “shields supported by the circuit card,” PCB 101. Consequently, Robertson et al. says nothing about shields “located respectively on each side of each of [a] plurality of corresponding pairs of [circuit element] signal lines” supported on the circuit card.

Claim 1 is patentable over Robertson et al. Claims 2 and 5 depend directly from claim 1 and are patentable over Robertson et al. for at least the same reasons.

Claim 6 recites, *inter alia*, a circuit card with “a plurality of shields supported by the circuit card.” The shields are “arranged and configured on said printed circuit board to be electrically connected at a first end to respective connectors of [a] connector device.” Each shield is “electrically connected at a second end to a respective one of [a] plurality of circuit element inputs or outputs.” The signal lines are “grouped in a plurality of adjacent corresponding pairs,” and “respective ones of said shields [are] located respectively on each side of each of said plurality of corresponding pairs of said signal lines.”

As noted above in connection with claim 1, Robertson et al. does not teach shields "arranged and configured on said printed circuit board." Robertson et al. also does not teach "respective ones of said shields being located on each side of each of said plurality of corresponding pairs of said signal lines," which signal lines also are "supported by the circuit card."

Claim 6 is patentable over Robertson et al. Claim 7 depends from claim 6 and is patentable over Robertson et al. for at least the same reasons.

Claim 8 recites, in pertinent part, a circuit card having "a shield on the circuit card extending adjacent and the length of each respective signal line pair," which are "on the circuit card." Robertson et al. does not disclose or suggest a circuit card with "a shield on the circuit card" that extends "adjacent and the length of each respective signal line pair." Claim 8 and its directly dependent claim 9 are patentable over Robertson et al.

Claim 11 recites a memory expansion card with a memory device. The memory expansion card includes, *inter alia*, "a plurality of shields on the expansion card and electrically connected to said memory device, a shield being located respectively between each pair of [a] plurality of corresponding pairs of [memory device] signal lines."

Robertson et al. does not teach or suggest shields "on the expansion card," "electrically connected to [a] memory device," nor "located respectively between...corresponding pairs of...signal lines." Claim 11 and its directly dependent claims 12 and 14 are patentable over Robertson et al.

Claim 15 recites a memory expansion card that includes "a plurality of shields supported by said expansion card and electrically connected to [a] memory

device.” Respective shields are “located to extend along and between each of [a] plurality of corresponding pairs of...signal lines.”

Robertson et al. does not teach or suggest “a plurality of shields supported by [an] expansion card” that are “located to extend along and between each of [a] plurality of corresponding pairs of...signal lines.” Claim 15 and directly dependent claim 16 are patentable over Robertson et al.

Claim 18 recites a memory expansion card assembly that includes, *inter alia*, “a connector device mounted on a motherboard and having a plurality of connectors, said plurality of connectors having a first portion for conducting signals and a second portion for providing a shield, said connectors in said first portion being grouped in a plurality of corresponding pairs, a respective one of said connectors in said second portion being located between each of said plurality of corresponding pairs of said first portion of said plurality of connectors,” “a plurality of signal lines on said expansion card being connected respectively to each of said first portion of connectors,” and “a plurality of shields on said expansion card being connected respectively to each of said connectors in said second portion and extending respectively along adjacent signal lines connected to said first portion of connectors.”

Robertson et al. teaches a connector in which certain pins are arranged as ground shields. Robertson et al. does not teach an expansion card as recited in claim 18 with “a plurality of shields on said expansion card.” Robertson et al. also does not teach or suggest such shields “extending respectively along signal lines.” Claim 18 is patentable over Robertson et al.

Claim 19 recites a processing system that includes, *inter alia*, “a plurality of shields supported by [a] circuit card, each shield being connected respectively to [a] circuit element, [and] signal lines being grouped in a plurality of adjacent

corresponding pairs, a shield being located between respective corresponding pairs of said signal lines.” The processing system disclosed by Robertson et al. does not include “a plurality of shields supported by [a] circuit card.” Claim 19 and directly-dependent claims 20 and 24 are patentable over Robertson et al.

Claim 26 recites a processing system that includes a memory expansion card with “a plurality of signal lines and a plurality of shields supported by said memory expansion card.” Each of a first portion of said plurality of inputs and outputs of said memory device is “coupled to a respective signal line to receive signals from or send signals to respective ones of said connectors of said connector device.” The signal lines are “grouped in a plurality of corresponding pairs.” A shield is “located on each respective side of each of said plurality of corresponding pairs of said signal lines.”

Robertson et al. does not teach or suggest “a plurality of shields supported by [a] memory expansion card.” Robertson et al. also does not teach or suggest that a shield is “located on each respective side of each of [a] plurality of corresponding pairs of...signal lines.” Claim 26 and dependent claims 27 and 29 are patentable over Robertson et al.

Claim 30 recites a processing system in which a memory expansion card a memory expansion card and “a plurality of shields supported by said expansion card and electrically connected to said memory device.” A “respective one of said plurality of shields” is “located to extend along each of said plurality of corresponding pairs of [a] plurality of signal lines.”

Robertson et al. discloses an arrangement of signal pins and ground pins in a connector for a memory device expansion card, but fails to disclose “a plurality of shields supported by said expansion card and electrically connected to said memory

device” with a “respective one of said plurality of shields being located to extend along each of said plurality of corresponding pairs of [a] plurality of signal lines.” Claim 30 and dependent claim 21 are patentable over Robertson et al.

Claim 33 recites a “method for constructing on a circuit card a bus system device.” The method includes steps of “providing a circuit element on said circuit card.” The circuit element has “a first plurality of connectors for conducting bus signals” grouped “into a plurality of corresponding pairs.” A second plurality of connectors provided on the circuit element is “connected to a respective shield supported on said circuit card.” A respective shield extends “along each side of respective pairs of signal lines supported on said circuit card” and “connected to each of said corresponding pairs of said first plurality of connectors.”

Robertson et al. does not teach a method of constructing a bus system on a circuit card by providing a shield that extends “along each side of respective pairs of signal lines supported on said circuit card.” Robertson et al. teaches providing ground shield *pins* supported on a connector, not a circuit card. The shield *pins* of Robertson et al. are not made to extend “along each side of respective pairs of signal lines supported on said circuit card.” Claim 33 is patentable over Robertson et al.

2. Rejection under 35 U.S.C. § 103(a) based on Robertson et al. and Chin et al.:

Claims 3 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson et al. in view of U.S. Pat. No. 6,216,205 to Chin et al. Reconsideration of this rejection respectfully is requested.

Claim 3 depends from claim 1. Claim 1 is patentable over Robertson et al. as advanced above. Chin et al. does not remedy the deficiencies of Robertson et al. Chin et al. has been cited as providing a driver to drive signals between inputs and outputs

of the circuit element. No combination of Chin et al. with Robertson et al. provides, for example, the “plurality of shields supported by the circuit card” missing from Robertson et al.

Claim 1 is patentable over Robertson et al. in view of Chin et al. Claim 3 depends directly from claim 1 and is patentable over Robertson et al. in view of Chin et al. for at least the same reasons.

Claim 22 depends from claim 19. Claim 19 is patentable over Robertson et al. as advanced above. Chin et al. does not remedy the deficiencies of Robertson et al. Chin et al. has been cited to provide line drivers, and does not supply the “plurality of shields supported by [a] circuit card” missing from Robertson et al. Claim 19 is patentable over Robertson et al. in view of Chin et al. Claim 22 depends directly from claim 19 and is patentable over Robertson et al. in view of Chin et al. for at least the same reasons.

3. Rejection under 35 U.S.C. § 103(a) based on Robertson et al. and Ortega et al.:

Claims 4, 10, 13, 17, 23, 28, 32, and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson et al. in view of U.S. Pat. No. 6,257,587 to Ortega et al. Applicant respectfully requests reconsideration of this rejection.

Claims 4, 10, 13, 17, 23, 28, and 35 depend directly from claims 1, 8, 11, 15, 19, 26, 30, and 35, respectively. Claims 1, 8, 11, 15, 19, 26, 30, and 35 are patentable over Robertson et al. as advanced above. Ortega et al. does not remedy the deficiencies of Robertson et al.

Ortega et al. has been cited in the Office Action to provide accommodation of differential signals, which is missing from Robertson et al. Ortega et al. does not teach

or suggest the "shield(s)" supported by or on "a circuit card" missing from Robertson et al. Each of claims 1, 8, 11, 15, 19, 26, 30, and 35 is patentable over Robertson et al. in view of Ortega et al., along with its respective dependent claim 4, 10, 13, 17, 23, 28, and 35.

4. Rejection under 35 U.S.C. § 103(a) based on Robertson et al. and Elabd:


Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson et al. in view of U.S. Pat. No. 6,526,462 to Elabd. Reconsideration of this rejection respectfully is requested.

Claim 25 depends directly from claim 19. Claim 19 is patentable over Robertson et al. Elabd does not remedy the deficiencies of Robertson et al. Elabd has been cited as providing a processing unit and a circuit member on the same chip. Elabd does not combine with Robertson et al. to provide the missing "shields supported by [a] circuit card," for example. Claim 19 and its dependent claim 25 are patentable over Robertson et al. in view of Elabd.

In view of the remarks and amendments above, applicant believes that the pending claims are in condition for allowance.

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